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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,072	01/16/2002	Kazuya Kubo	Q68120	2422

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EXAMINER
OLTMANS, ANDREW L

ART UNIT	PAPER NUMBER
1742	

DATE MAILED: 04/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/046,072	KUBO ET AL.	
	Examiner	Art Unit	
	Andrew L Oltmans	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

1. Claims 1-10 remain pending in this application. In response to applicant's amendment, the rejection made under 35 USC 102 over JP '180 has been withdrawn and reapplied under 35 USC 103. The rejection under 35 USC 103 over JP '446 in view of JP '180 has been maintained. The newly added claims (i.e. 5-10) have been rejected, as appropriate, under 35 USC 103. In view of the fact that the amendments presented in this application are in response to applicant's amendment, this Office Action is FINAL.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claim 8 recites the limitation "said heat treatment" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

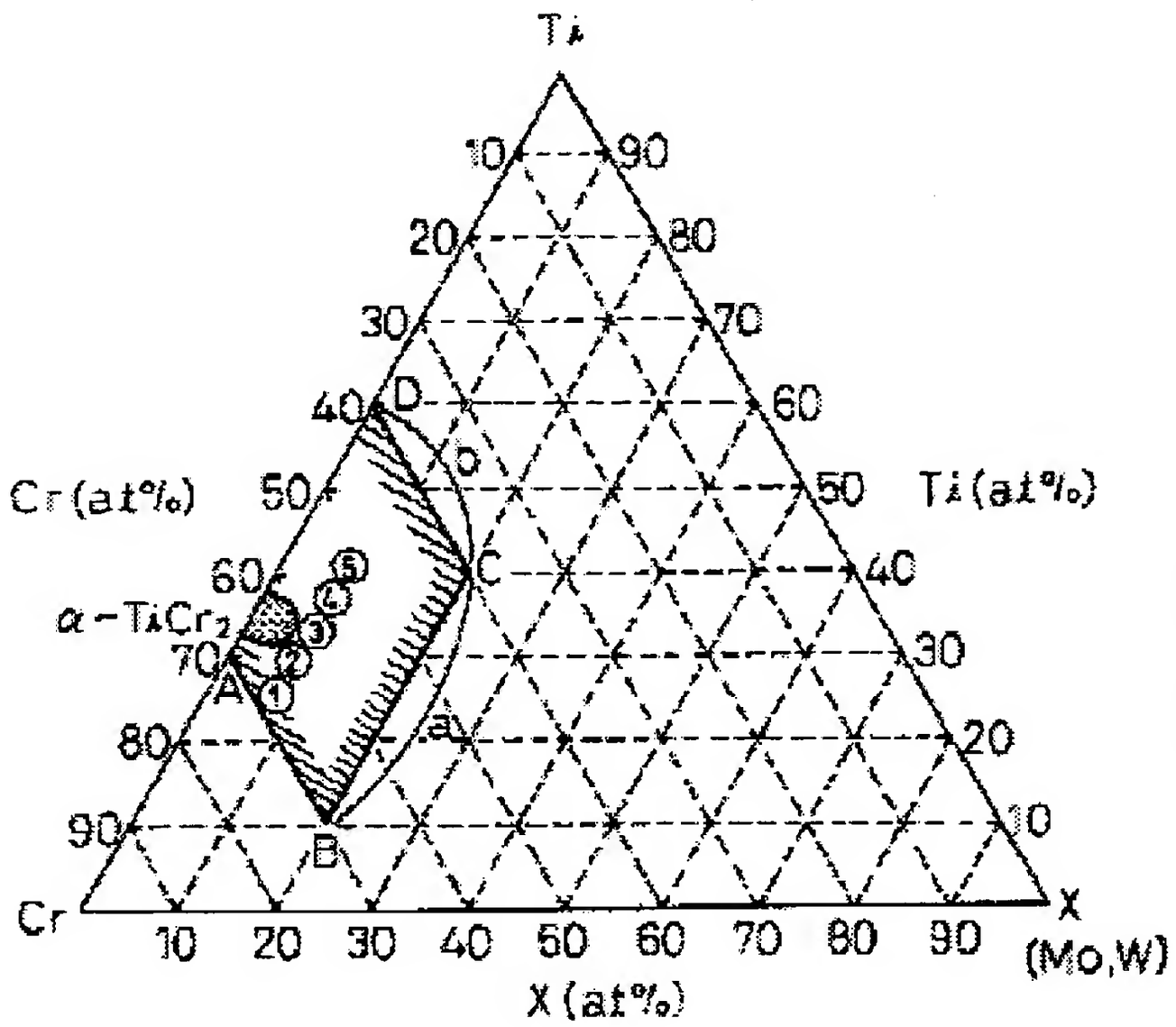
Japanese Patent JP 10-121180 A

5. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent JP 10-121180 A (JP '180).

NOTE: All references to the JP '180 reference are to the English Language abstract (PAJ) or the English Language translation provided by the Examiner, unless otherwise indicated.

JP '180 teaches a hydrogen storage alloy having a Ti-Cr-Mo formula, wherein the structure of the alloy is body-centered cubic (abstract), as recited in claims 1 and 2. JP '180 further teaches a method wherein the hydrogen storage alloy is heat treated at conditions encompassed by the conditions instantly claimed, including a water quench (i.e. cooling at a rate not less than the speed of water cooling) (abstract; paragraph [0014]), as recited in claims 3-4. JP '180 teaches ranges of Ti, Cr and Mo that overlap the ranges recited in the instant claims (abstract) and further teaches specific embodiments that so close to the claimed range that one of ordinary skill in the art would expect the alloy having "greater than 7% by atomic weight" to have the same properties as an embodiment at 7%, as recited in claims 1, 2 and 5-7 (see Japanese Language Patent Figure 1):

(a)



(b)

(at%)

	Ti	Cr	X
①	27	66	7
②	30	63	7
③	33	60	7
④	36	57	7
⑤	39	54	7

It is noted that claim 2 does not distinguish over JP '180 despite the recitation of Fe, because the claimed compositional concentration of Fe (i.e. "d") is "not larger than 15% by atomic weight"

(claim 2, lines 7-8), which encompasses zero. Further, claim 8 recites "said heat treatment" wherein the heat treatment taught in JP '180 is sufficient to read on the claim.

JP '180 fails to meet all the limitations of the instant claims in that JP '180 does not explicitly teach the exact range of composition instantly claimed.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the alloy taught by the reference has a composition which overlaps that of the instant claims, or is so near to the composition claimed so as to expect the same properties. It would have been obvious to one of ordinary skill in the art to select any portion of range, including the claimed range, from the broader range disclosed in JP '180 because JP '180 finds that the prior art composition in the entire disclosed range has a suitable utility. See In re Peterson, 65 USPQ2d 1379, In re Malagari, 182 USPQ 549, Titanium Metals Corp. of America v. Banner, 227 USPQ 773 and MPEP 2144.05.

Japanese Patent JP 04-210446 A in view of Japanese Patent JP 10-121180 A

6. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent JP 04-210446 A (JP '446) in view of Japanese Patent JP 10-121180 A (JP '180).

NOTE: All references to the JP '180 and JP '446 references are to the English Language abstract (PAJ) or the English Language translations provided by the Examiner, unless otherwise indicated.

JP '446 teaches a hydrogen storage alloy composition have the general formula $Ti_xCr_{2-y}Mo_y$ (where $0.8 \leq x \leq 1.2$ and $0 < y \leq 1.0$) or the general formula $Ti_xCr_{2-y-z}Mo_yFe_z$ (where $0.8 \leq x \leq 1.2$, $y > 0$ and $z \leq 1.0$) wherein JP '446 teaches that the alloy is refined, cooled and crushed (abstract). JP '446 teaches compositional ranges for Ti, Cr, Mo and Fe that overlap the ranges instantly

claimed (abstract) and further teaches specific embodiments fully encompassed by the compositional ranges, as recited in claims 1-2, 5-7 and 9-10 (Japanese Language Patent Figure, page 3):

試料 No.		合金組成	水素吸蔵量 (cc/g)	水素放出量 (cc/g)	効率 (%)	反応速度
発明材	1	$TiCr_{1.8}Mo_{0.2}$	330	240	73	○
	2	$TiCr_{1.8}Mo_{0.2}$	340	270	79	○
	3	$TiCr_{1.8}Mo_{0.2}$	330	240	73	○
	4	$TiCrMo_{0.8}Fe_{0.2}$	320	260	78	○
	5	$TiCr_{1.8}Mo_{0.8}Fe_{0.4}$	310	230	74	○
比較材	6	$TiCr_2$	190	140	74	○
	7	V	410	230	56	×

With respect to claim 8, claim 8 recites "said heat treatment" wherein the heat treatment taught in JP '446 and JP '180 is sufficient to read on the claim (see 112-2nd paragraph rejection, above).

JP '446 fails to meet all the limitations of the instant claims in that JP '446 does not explicitly teach the structure of the alloy, or the heat treatment steps recited in the claims.

JP '180 teaches a method wherein the hydrogen storage alloy is heat treated at conditions encompassed by the conditions instantly claimed, including a water quench (i.e. cooling at a rate not less than the speed of water cooling) (abstract; paragraph [0014]), as recited in claims 3-4.

JP '180 further teaches that the method of heat treatment and rapid cooling results in an equalization of the body centered cubic (BCC) structure and desirably provides a hydrogen storage alloy having increased hydrogen storage capacity, decreased manufacturing cost, and is an optimal manufacturing process capable of an industrial scale (paragraphs [0006] and [0007]).

One of ordinary skill in the art at the time that the invention was made would have found the invention to be obvious because one of ordinary skill in the art would have been motivated to heat treat the alloy of JP '446 according the treatment taught in JP '180 in order to provide the JP '446 with the desirable properties of a hydrogen storage alloy having increased hydrogen storage capacity, decreased manufacturing cost, and is an optimal manufacturing process capable of an industrial scale, wherein the structure includes the BCC structure, as taught in JP '180 (JP '180: paragraphs [0006] and [0007]).

Response to Arguments

7. Applicant's arguments filed January 29, 2004 have been fully considered but they are not persuasive. Claims 1-10 remain pending in this application. In response to applicant's amendment, the rejection made under 35 USC 102 over JP '180 has been withdrawn and reapplied under 35 USC 103. The rejection under 35 USC 103 over JP '446 in view of JP '180 has been maintained. The newly added claims (i.e. 5-10) have been rejected, as appropriate, under 35 USC 103.

8. The rejection under 35 USC 102 has been withdrawn in view of applicant's amendment. However, the claimed range is now overlapping, or so close that one of ordinary skill in the art would expect the properties of the taught alloy (i.e. 7%) to be the same as the claimed alloy (i.e.

greater than 7%). Therefore, the claimed range of composition is obvious over the taught range and examples of JP '180, see MPEP 2144.05.

9. The examiner has considered applicant's allegations of new and unexpected results, including the references to Figures 2 and 3. However, the examiner has not found the data persuasive. First, the compositions compared in Figures 2 and 3 are both "according to the present invention" (see Brief Description of the Drawings), so there is no comparison with the closest prior art. Further, there is no comparison with anything but the invention itself. Second, the properties alleged as being new and unexpected (e.g. "hydrogen storage properties") are not claimed. Third, the applicant has failed to specifically point out what the new and unexpected results are. The general references to "good results" and "sufficient storage properties" (see e.g. second to last paragraph on page 7 and paragraph bridging pages 7-8 of applicant's response) is insufficient to establish new and unexpected results. For at least the above-discussed reasons, the allegations of new and unexpected results are not found persuasive.

10. With respect to applicant's argument that JP '446 fails to make up for the deficiencies of JP '180, the argument is not found persuasive. The examiner maintains that the claims are obvious over JP '446 in view of JP '180 for the reasons set forth in the rejection and the response to arguments with respect to JP '180, above. Although applicant argues that there is no motivation to combine the cited references, the examiner maintains that one of ordinary skill in the art would be "motivated to heat treat the alloy of JP '446 according the treatment taught in JP '180 in order to provide the JP '446 with the desirable properties of a hydrogen storage alloy having increased hydrogen storage capacity, decreased manufacturing cost, and is an optimal manufacturing process capable of an industrial scale, wherein the structure includes the BCC

structure, as taught in JP '180 (JP '180: paragraphs [0006] and [0007])" (see statement of the rejection in paragraph 4 of the previous Office Action).

11. In view of all of the above, the arguments are not found persuasive.

Conclusion

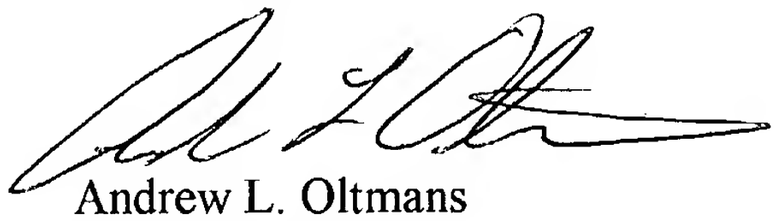
12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew L Oltmans whose telephone number is 571-272-1248. The examiner can normally be reached from 7:00 to 3:30, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Andrew L. Oltmans
Patent Examiner
Art Unit 1742

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